

Bellringer

★ How much pressure is on the bottom of a pot that holds 30N of soup? The area of the bottom of the pot is 0.09 m².

★ What pressure does 83,000 N of water apply on a 0.73 m² surface area of coral?

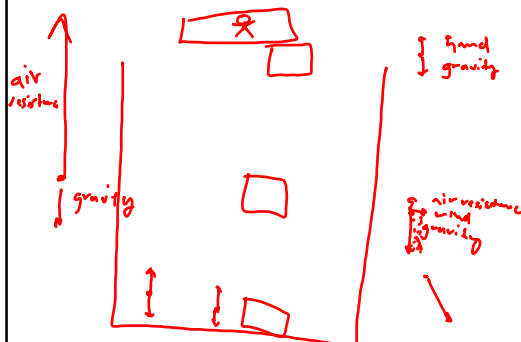
Bellringer

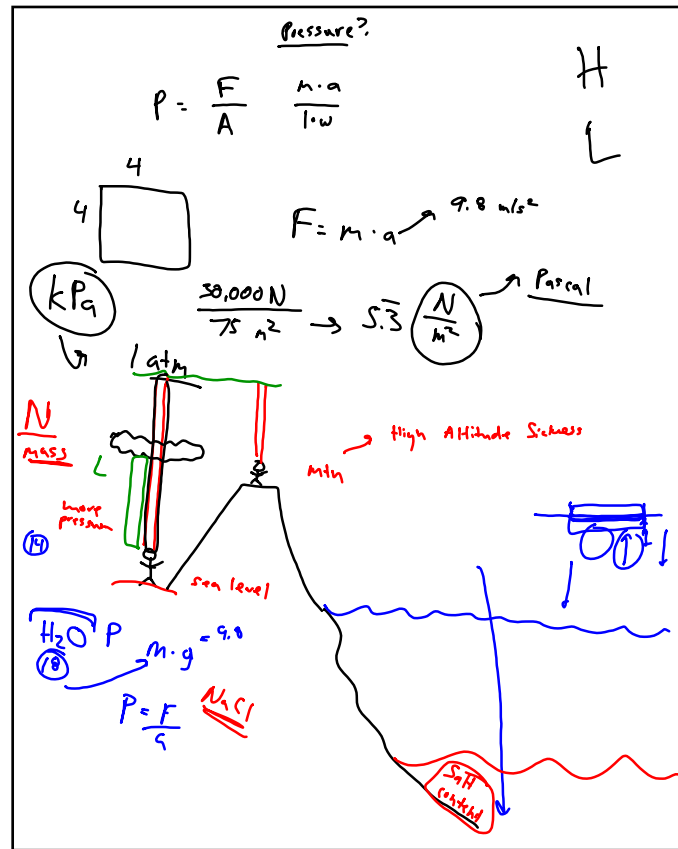
→ What is buoyancy?

→ Explain how a really large boat, like a barge, floats.



Wikimedia.
org



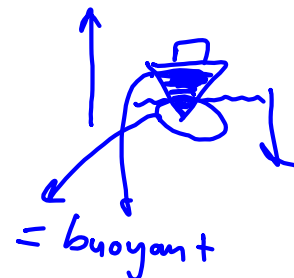


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* What is pressure? *

★ Explain the following:

- Bernoulli's principle
- Archimedes principle
- Pascal's principle



Grade: 8th
Subject: Physical Science
Date:

- 1 The water in a small plastic swimming pool applies a force of 30,000 N over an area of 75 square meters. What is the pressure of the pool (in Pascals)?

$$\frac{30,000 \text{ N}}{75 \text{ m}^2} \rightarrow 400 \text{ Pa}$$

2 A _____ is any substance that can flow and takes the shape of its container.

fluid

-

3 _____ is the amount of force per unit of area applied to an object's surface area.

pressure

.

- 4 What is the density of corn oil? A sample has a mass of 92 grams and a volume of 102 cubic centimeters.

$$\frac{92 \text{ g}}{102 \text{ cm}^3}$$

- 5 As surface area decreases over which a force is applied, the pressure decreases.

True

False

6 You have more pressure acting on you on top of Mount Everest than you do at sea-level.

True

False

Boat Specifics

16 in x 12 in max

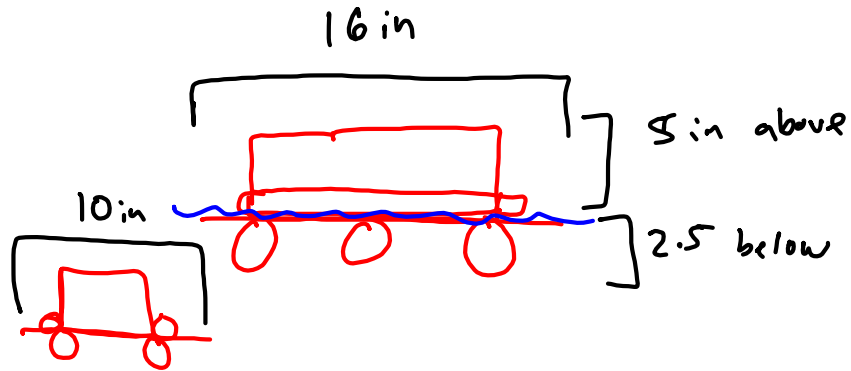
tall as
you want

Materials:

wood
cardboard
(covered in plastic)
foam

Blue + Red Balls
foil
plastic containers
balsa wood
test (large)
w/ stoppers

craft supplies
(tape
popsicle sticks
glue) etc.
twine
twist ties



Grade: 8th
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- 1 The ratio of your surface weight to a column of air extending directly upward from you to the stratosphere is referred to as the amount of _____ pressure.

atmospheric

- 2 Gases and liquids are both _____.

fluids

3 Honey is more dense than water.

True

False

.

4 Olive oil is more dense than water.

True

False

.

5 Density is equal to _____ divided by _____.

- A force; volume
- B volume; mass
- C volume; force
- D mass; volume

$$\begin{array}{l} g \rightarrow kg \\ \text{cm}^3 \text{ or mL} \end{array} = \frac{\text{mass}}{\text{volume}} \quad \begin{array}{l} g/mL \\ kg/m^3 \end{array}$$

6 Ethanol is more dense than water.

True

False

7 The _____ force is an upward force applied on an object in a fluid.

buoyant

8 _____ principle states that the weight of the fluid that an object displaces is equal to the buoyant force acting on the object.

Archimedes

- 9 _____ principle states that when pressure is applied to a fluid in a closed container, the pressure increases equally everywhere in the container.

Pascal's

.

- 10 _____ principle states that when the speed of a fluid increases, the pressure of the fluid decreases.

Bernoulli's

.

11 The _____ force is the force that opposes an object as it travels through a fluid.

Drag

12 Pascal's principle explains why boats float.

True

False

13 Archimede's principle explains how hydraulic jacks and pistons work.

True

False

14 Bernoulli's principle explains how airplane wings work.

True

False

- 15 Joseph weighs 290 N and displaces 300 N of water as he swims beneath the surface. What is the buoyant force acting on Joseph?

- 16 What pressure does Adam apply to a ball of dough when he pushes on it with a 25 N force? The surface area of the ball of dough is 0.01 square meters. Answer units in Pascals.

$$\frac{25 \text{ N}}{0.01 \text{ m}^2} \rightarrow P_s$$

Bellringer

★ Google the word "

"Fracking"

- org
- gov
- edu

→ Should we use "fracking" to make energy?

→ Pros + Cons of "Fracking"

Ch.4 Cell Structure + Function

- Cell theory (3 parts)
- Prokaryotes vs Eukaryotes
- 3 shapes of Bacteria
- Endosymbiont theory
- Organelles: plants + animals, pro + eukaryotes

Ch.5 Membrane Structure + Function

- Modes of Passage
 - (Osmosis, bulk transport, active, passive + diffusion)
- Solutions (ISO, hypo, hyper)

Ch.6 Metabolism: Energy + Enzymes

- Types of Energy (KE, PE, E, ME)
- 1st + 2nd Law of Thermodynamics
 - Entropy
- Free Energy (ΔG , ΔG°)
- Metabolism
- Exergonic + Endergonic
- Enzyme-substrate complex
 - "active site"
 - "allosteric site"

- Factors affecting enzyme function
 - (2 main: pH + temperature)
- Oxidation vs reduction rxns
 - lose e⁻ → oxidation
 - gain e⁻ → reduction

Ch.7 Photosynthesis

- Leaf Structure → draw a diagram (stoma, stomata, Thylakoid, chloroplast)
- Two rxns of Photosynthesis (light + Calvin)
- Explain ETC (how does ETC work)
- Types of Photosynthesis: C₃, C₄, CAM
- Calvin Cycle Rxn
 - CO₂ fix., Reduction of CO₂
 - Regeneration

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→ Give an example of how a drag force can affect the motion of an object?